

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A heat treatment method comprising the steps of:

holding a treatment ~~object~~ substrate in a processing chamber;

heating the treatment ~~object~~ substrate by irradiating it with a radiation from a lamp light source which is held for 0.1 to 20 seconds wherein a temperature rise rate of the treatment substrate is 100 to 200° C per second ~~light from a lamp light source during a first period~~, while supply of ~~a coolant~~ a first inactive gas is kept in the processing chamber so that the first inactive gas passes along an irradiated surface of the treatment substrate and a surface opposite to the irradiated surface of the treatment substrate; and

cooling the treatment substrate ~~object during a second period~~ wherein a temperature drop rate of the treatment substrate is 50 to 150° C per second, while supply of ~~the coolant~~ a second inactive gas is kept in the processing chamber so that the second inactive gas passes along the irradiated surface of the treatment substrate and the surface opposite to the irradiated surface of the treatment substrate,

~~wherein said lamp light source is turned on and a radiation from said lamp light source is held for 0.1 to 20 seconds in the first period,~~

~~wherein a temperature rise rate by irradiating the treatment object with light from the lamp light source is 100 to 200° C per second in the first period, and~~

~~wherein a temperature drop rate by the supply of the coolant is 50 to 150° C per second in the second period.~~

2. (Withdrawn) A heat treatment method comprising the step of:

heating a treatment object by irradiating it through radiation from a lamp light source,

wherein the radiation from said lamp light source is pulsatively repeated several times such that the treatment object holds the temperature to its highest for 0.5 to 5 seconds.

3. (Currently Amended) A heat treatment method comprising the steps of:

holding a treatment ~~object~~ substrate in a processing chamber;

heating the treatment ~~object~~ substrate by irradiating it with a radiation from a lamp light source which is held for 0.1 to 20 seconds wherein a temperature rise rate of the treatment substrate is 100 to 200° C per second ~~light from a lamp light source during a first period~~, while supply of a ~~coolant~~ a first inactive gas is kept in the processing chamber so that the first inactive gas passes along an irradiated surface of the treatment substrate and a surface opposite to the irradiated surface of the treatment substrate; and

cooling the treatment substrate ~~object during a second period~~ wherein a temperature drop rate of the treatment substrate is 50 to 150° C per second, while supply of the ~~coolant~~ a second inactive gas is kept in the processing chamber so that the second inactive gas passes along the irradiated surface of the treatment substrate and the surface opposite to the irradiated surface of the treatment surface,

~~wherein a radiation from said lamp light source is held for 0.1 to 20 seconds at a time in the first period,~~

wherein the radiation from said lamp light source is repeated several times in the first period,

~~wherein a temperature rise rate by irradiating the treatment object with light from the lamp light source is 100 to 200° C per second in the first period, and~~

~~wherein a temperature drop rate by the supply of the coolant is 50 to 150° C per second in the second period.~~

4. (Withdrawn) A heat treatment method comprising the steps of:
holding a treatment object in a processing chamber filled with a coolant; and
heating the treatment object by irradiating it through radiation from a lamp light source,

wherein the radiation from said lamp light source is repeated several times such that the treatment object holds the temperature to its highest for 0.5 to 5 seconds.

5. (Currently Amended) A heat treatment method comprising the steps of:
holding a treatment ~~object~~ substrate in a processing chamber;
heating the treatment ~~object~~ substrate by irradiating it with a radiation from a lamp light source which is held for 0.1 to 20 seconds wherein a temperature rise rate of the treatment substrate is 100 to 200° C per second ~~light from a lamp light source during a first period~~, while supply of a ~~coolant~~ a first inactive gas is kept in the processing chamber so that the first inactive gas passes along an irradiated surface of the treatment substrate and a surface opposite to the irradiated surface of the treatment substrate; and

cooling the treatment ~~substrate~~ ~~object~~ during a second period wherein a temperature drop rate of the treatment substrate is 50 to 150° C per second, while supply of the ~~coolant~~ a second inactive gas is kept in the processing chamber so that the second inactive gas passes along the irradiated surface of the treatment substrate and the surface opposite to the irradiated surface of the treatment substrate,

~~wherein said lamp light source is turned on and a radiation from said lamp light source is held for 0.1 to 20 seconds in the first period,~~

~~wherein a temperature rise rate by irradiating the treatment object with light from the lamp light source is 100 to 200° C per second in the first period, and~~

~~wherein said lamp light source is turned off while a treatment of increasing the amount of supply of the ~~coolant~~ second inactive gas during cooling is larger than the~~

~~amount of supply of the first inactive gas during heating so that a temperature drop rate is 50 to 150° C per second in the second period.~~

6. (Withdrawn) A heat treatment method comprising the steps of:
holding a treatment object in a processing chamber filled with a coolant; and
heating the treatment object by irradiating it through radiation from a lamp light source,

wherein said lamp light source is turned on while an amount of supply of the coolant is reduced,

wherein said lamp light source is turned off while a treatment of increasing the amount of supply of the coolant as one cycle is repeated several times, after the treatment object holds the temperature to its highest for 0.5 to 5 seconds.

7. (Original) A heat treatment method according to claim 1, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

8. (Withdrawn) A heat treatment method according to claim 2, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

9. (Original) A heat treatment method according to claim 3, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

10. (Withdrawn) A heat treatment method according to claim 4, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

11. (Original) A heat treatment method according to claim 5, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

12. (Withdrawn) A heat treatment method according to claim 6, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

13. (Withdrawn) A heat treatment method comprising the step of:
heating a treatment object having a semiconductor film by irradiating it through radiation from a lamp light source,
wherein the radiation from said lamp light source lasts 0.1 to 20 seconds at a time,
wherein the radiation from said lamp light source is repeated several times.

14. (Withdrawn) A heat treatment method comprising the steps of:
holding a treatment object having a semiconductor film in a processing chamber filled with a coolant; and
heating the treatment object by irradiating it through radiation from a lamp light source,

wherein the radiation from said lamp light source is held for 0.1 to 20 seconds at a time,

wherein the radiation from said lamp light source is repeated several times.

15. (Withdrawn) A heat treatment method comprising the steps of:

holding a treatment object having a semiconductor film in a processing chamber filled with a coolant; and

heating the treatment object by irradiating it through radiation from a lamp light source,

wherein said lamp light source is turned on and the radiation from said lamp light source is held for 0.1 to 20 seconds at a time, while an amount of supply of the coolant is reduced,

wherein said lamp light source is turned off while a treatment of increasing the amount of supply of the coolant as one cycle is repeated several times.

16. (Withdrawn) A heat treatment method according to claim 13, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

17. (Withdrawn) A heat treatment method according to claim 14, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

18. (Withdrawn) A heat treatment method according to claim 15, wherein said lamp light source is selected from the group consisting of a halogen lamp, a metal

halide lamp, a xenon lamp, a high pressure mercury lamp, a high pressure sodium lamp and an excimer lamp.

19. (Currently Amended) A heat treatment method according to claim 1, wherein each of the coolant is an first inactive gas and the second inactive gas comprises comprising at least one of nitrogen and helium.

20. (Currently Amended) A heat treatment method according to claim 3, wherein each of the coolant is an first inactive gas and the second inactive gas comprises comprising at least one of nitrogen and helium.

21. (Currently Amended) A heat treatment method according to claim 5, wherein each of the coolant is an first inactive gas and the second inactive gas comprises comprising at least one of nitrogen and helium.